MODULE DESCRIPTOR

Module Title	Core and Materials Science
Course Title	BSc (Hons) Forensic Science
School	☒ ASC ☐ ACI ☐ BEA ☐ BUS ☐ ENG ☐ HSC ☐ LSS
Division	Human Sciences
Level	4
Module Code *(showing level)*	ASC_4_415
JACS Code (completed by the QA)	
Credit Value	20 credit points
Student Study Hours	Contact hours: 110 Student managed learning hours: 90
Pre-requisite Learning	None
Co-requisites	None
Excluded combinations	None
Module co-ordinator	Name: Mark Amaral E-mail: amaralm@lsbu.ac.uk
Short Description (max. 100 words)	This is an introductory unit providing a foundation in the physical sciences relevant to the study of forensic science. Throughout the module, students are introduced to the nature of matter and the classification of materials, including their physical and chemical nature, and contextualises this in terms of forensic science. To achieve this, knowledge of underlying chemistry and physics is necessary and core concepts will be taught throughout the lecture series.
Aims	1. To impart a fundamental understanding of the atomic and molecular basis for material properties and the main types of materials which are commonly found at crime scenes and accident scenes; 2. To provide a sound theoretical basis for the identification and comparison of materials commonly found at crime scenes; 3. To provide a sound theoretical basis for the behaviour of common materials in a range of accident scenarios.
Learning Outcomes (4 to 6 outcomes)	**Knowledge and Understanding**: how an understanding of materials science directly relates to forensic science and its application to solving crime. **Intellectual Skills**: understand how materials science is important to the identification and comparison of materials. **Practical Skills**: display basic numerical, reasoning and logical thinking skills. **Transferable Skills**: develop skills in rational argument and data analysis for the testing of ideas and experimental outcomes.

Employability	This module provides the underpinning science for understanding materials and material behaviour. This will underpin more specialised and vocational study at higher levels. Without a fundamental understanding of materials science, the two main avenues of employment: Accident Investigation and Crime Scene Investigation will be closed off. In order to identify materials, or confirm matches, an understanding of the nature of materials and their behaviour on an atomic and molecular level is required.
Teaching and learning pattern	Contact hours includes the following: (please click on the checkboxes as appropriate) ☒ Lectures ☐ Group Work: ☒ Seminars ☒ Tutorial: ☐ Laboratory ☐ Workshops ☐ Practical ☐ VLE Activities
Indicative content	The unit will be delivered by a mixture of lectures broadly covering: • atomic structure and periodicity; • properties of solutions; • electrochemistry; • acids and bases; • carbon-based materials; • rates of reactions and chemical equilibrium; • thermodynamics, energy conversion and transfer processes; • classification and physical properties of materials; • metals and alloys; • plastics and ceramics; • cement and concrete; • lubricants and surface coatings; • fibres and hair; • wood; • fuels, accelerants and explosives; • toxicity of materials and radioactivity.
Assessment method (Please give details – of components, weightings, sequence of components, final component)	Formative assessment: checking understanding of key concepts and calculations during seminar and tutorial sessions Summative assessment: 1. **Coursework (75%) consisting of three sub-components** • Energy interactions (25%) • Materials science (25%) • Toxicology (25%) 2. **25% Examination** • 2-hour unseen examination
Mode of resit assessment	Formative assessment: N/A Summative assessment: **as first sit**
Indicative Sources *(Reading lists)*	• Brown, T. E., *et al*. (2015). **Chemistry: The Central Science** (*13th Ed.).* Pearson. • Bell, S. (2013). **Forensic Chemistry** (*2nd Ed.*). Pearson. • Jackson, A. R. W. & Jackson, J. M. (2011). **Forensic Science** (*3rd Ed.*). Prentice Hall.

	• White, P. C. (2016). **Crime Scene to Court: The Essentials of Forensic Science** *(4th Ed.)*. Royal Society of Chemistry.
Other Learning Resources	VLE